



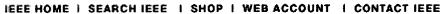
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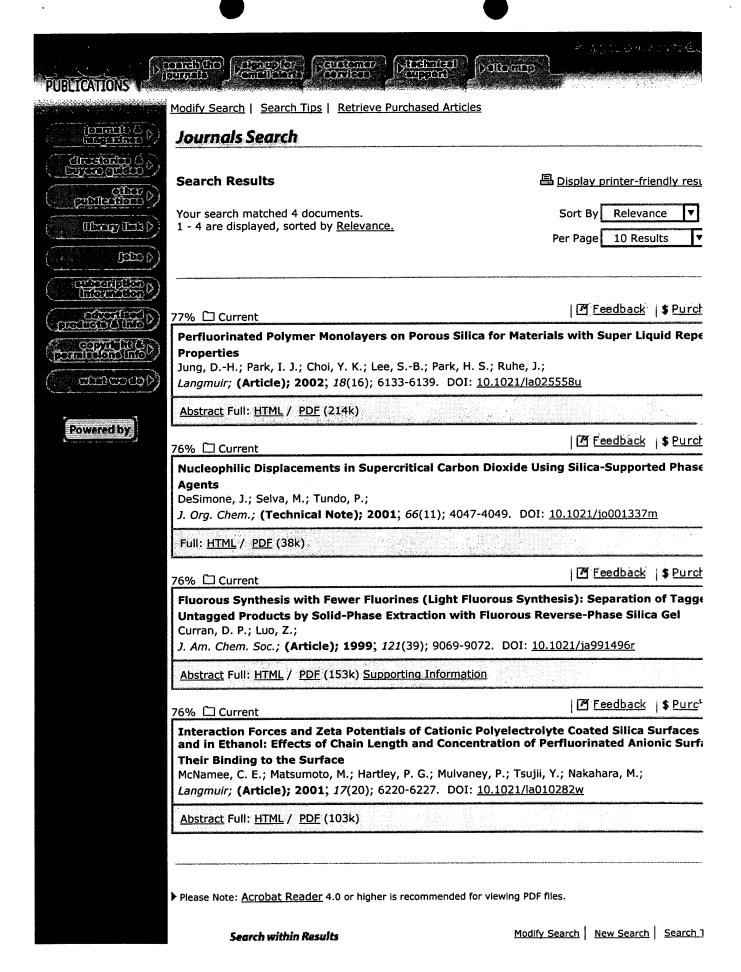
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Watanabe, Y.; Onishi, T.; Tsukamoto, T.; Matsuyama, Y.; Optical Fiber Communication Conference and Exhibit, 2001. OFC 2001, 2001 Page(s): ThC6 -T1-3 vol.4

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Fluorous Synthesis with Fewer Fluorines (Light Fluorous Synthesis): Separation of Tagged from Untagged Products by Solid-Phase Extraction with Fluorous Reverse-Phase Silica Gel

Dennis P. Curran* and Zhiyong Luo

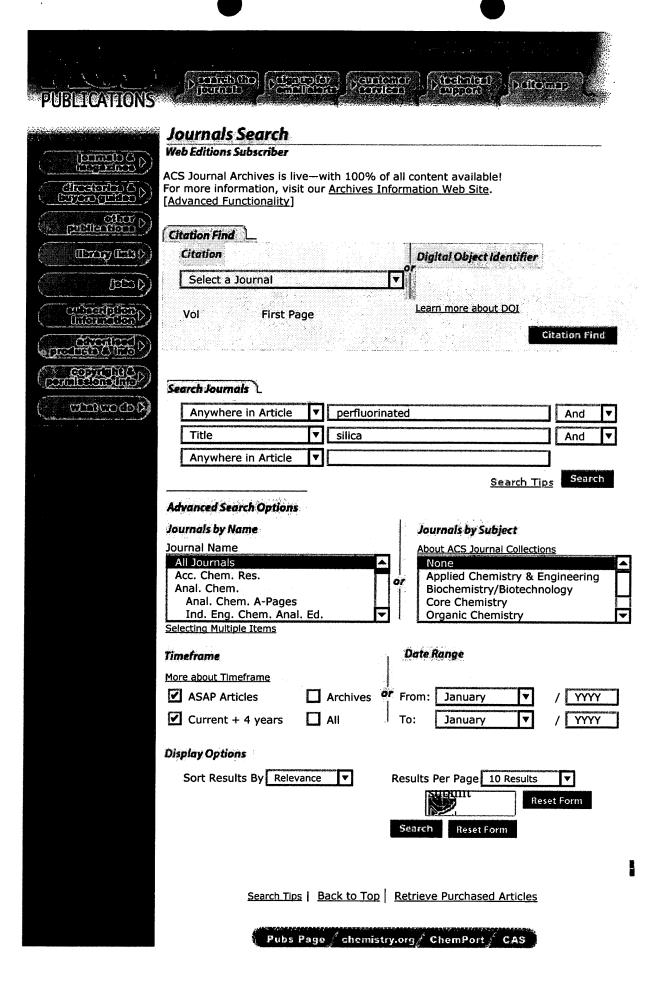
Contribution from the Department of Chemistry and Center for Combinatorial Chemistry, University of Pittsburgh, Pittsburgh, Pennsylvania 15260

Received May 6, 1999

Abstract:

Fluorous synthesis involves tagging an organic substrate with a fluorinated tag for the purposes of separation. To date, techniques of fluorous synthesis have relied on liquid-liquid extractions. This paper applies a simple solid-liquid extraction procedure over fluorous reverse-phase silica gel (silica with a fluorocarbon bonded phase) for use in fluorous synthesis. Four amino acids were tagged on nitrogen with the C₉F₁₉CO- group, and the resulting acids were coupled in a parallel experiment with an excess of four amines. The resulting 16 crude fluorous amide products were separated from all the coupling reagents and excess amine by two-stage filtration through fluorous silica. In 15 of the 16 cases, the products were isolated in good to excellent yield and purity. All of the products are soluble in organic solvents and none is expected to have any significant solubility in fluorous solvents, so the experiment dramatically illustrates the advantages of the solid-liquid extraction over the liquid-liquid extraction. Future prospects for application of fluorous silica are briefly discussed.

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     Investigation by pyrolysis-gas chromatography of the composition of
ΤI
     multicomponent polymeric microheterogeneous systems based on some vinyl
     monomers
     Shadrina, N. E.; Dmitrenko, A. V.; Pavlova, V. F.; Ivanchev, S. S.
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     Plastpolym. Okhta Res. Prod. Assoc., Leningrad, USSR
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     2000:681835 CAPLUS
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ΤI
     Transformation of MTBE over a solid acid catalyst
     Richards, Sarah A.; Zhang, Wei-xian
ΑU
     Department of Civil and Environmental Engineering, Lehigh University,
CS
     Bethlehem, PA, 18015, USA
     Chemical Oxidation and Reactive Barriers: Remediation of Chlorinated and
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     Recalcitrant Compounds, International Conference on Remediation of
     Chlorinated and Recalcitrant Compounds, 2nd, Monterey, CA, United States,
     May 22-25, 2000 (2000), 249-255. Editor(s): Wickramanayake, Godage B.;
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ANSWER 3 OF 7 CAPLUS COPYRIGHT 2003 ACS L5 2000:349798 CAPLUS AN133:363157 DN Inorganic-organic copolymers - materials with a high potential for ΤT chemical modification Rose, Klaus; Amberg-Schwab, Sabine; Heinrich, Matthias ΑU Fraunhofer-Institut fur Silicatforschung, Wurzburg, D-97082, Germany CS Organosilicon Chemistry IV: From Molecules to Materials, [Lectures and SO Poster Contributions presented at the Muechner Silicontage], 4th, Muechen, Apr., 1998 (2000), Meeting Date 1998, 613-619. Editor(s): Auner, Norbert; Weis, Johann. Publisher: Wiley-VCH Verlag GmbH, Weinheim, Germany. CODEN: 68ZMAL DTConference; General Review English THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD RE.CNT 9 ALL CITATIONS AVAILABLE IN THE RE FORMAT ANSWER 4 OF 7 CAPLUS COPYRIGHT 2003 ACS L5 1999:99321 CAPLUS AN DN 130:238192 Ceramers based on crosslinked epoxy resins-silica hybrids: low surface ΤI energy systems ΑU Mascia, L.; Tang, T. Institute of Polymer Technology and Materials Engineering, Loughborough CS University, Loughborough, LE11 3TU, UK Journal of Sol-Gel Science and Technology (1998), 13(1/2/3), 405-408 SO CODEN: JSGTEC; ISSN: 0928-0707 Kluwer Academic Publishers PB Journal DTEnglish LA RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT ANSWER 5 OF 7 CAPLUS COPYRIGHT 2003 ACS L5 1998:588332 CAPLUS AN DN 129:281577 Schnell gel: rapid formation of low density gels from a TItetra(fluoroalkoxy)silane Sharp, Kenneth G. ΑU Central Research, DuPont Co., Wilmington, DE, 19880-0323, USA CS Materials Research Society Symposium Proceedings (1998), 520 (Nanostructured Powders and Their Industrial Applications), 123-135 CODEN: MRSPDH; ISSN: 0272-9172 PB Materials Research Society DTJournal LA English THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD RE.CNT 24 ALL CITATIONS AVAILABLE IN THE RE FORMAT ANSWER 6 OF 7 CAPLUS COPYRIGHT 2003 ACS L5 AN1989:633699 CAPLUS 111:233699 DN Perfluorinated-ionomer-membrane-based microcomposites. Silicon TIoxide filled membranes Mauritz, K. A.; Storey, R. F.; Jones, C. K. ΑU CS Dep. Polym. Sci., Univ. South Mississippi, Hattiesburg, MS, 39406-0076, USA ACS Symposium Series (1989), 395 (Multiphase Polym.: Blends Ionomers), SO 401-17 CODEN: ACSMC8; ISSN: 0097-6156 Journal DTLA English L5 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2003 ACS

1987:555099 CAPLUS ΑN 107:155099 DN Investigation by pyrolysis-gas chromatography of the composition of ΤI multicomponent polymeric microheterogeneous systems based on some vinyl Shadrina, N. E.; Dmitrenko, A. V.; Pavlova, V. F.; Ivanchev, S. S. ΑU Plastpolym. Okhta Res. Prod. Assoc., Leningrad, USSR CS Journal of Chromatography (1987), 404(1), 183-95 SO CODEN: JOCRAM; ISSN: 0021-9673 DΤ Journal English LA L5 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2003 ACS 2000:349798 CAPLUS AN DN 133:363157 Inorganic-organic copolymers - materials with a high potential for TΙ chemical modification Rose, Klaus; Amberg-Schwab, Sabine; Heinrich, Matthias ΑU Fraunhofer-Institut fur Silicatforschung, Wurzburg, D-97082, Germany CS Organosilicon Chemistry IV: From Molecules to Materials, [Lectures and SO Poster Contributions presented at the Muechner Silicontage], 4th, Muechen, Apr., 1998 (2000), Meeting Date 1998, 613-619. Editor(s): Auner, Norbert; Weis, Johann. Publisher: Wiley-VCH Verlag GmbH, Weinheim, Germany. CODEN: 68ZMAL DT Conference; General Review English LA36-0 (Physical Properties of Synthetic High Polymers) CC A review with 9 refs. The surface properties of coatings derived from AΒ inorg.-org. copolymers were adjusted by the proper choice of monomeric organoalkoxysilanes of the general type R'nSi(OR)4-n (n = 1 or 2). Special compds. with functional groups in R' were incorporated into an inorg. backbone via hydrolysis and condensation reactions during sol-gel processing forming an inorg.-org. hybrid material. Perfluorinated alkyl chains in R' reduce the surface energy, thus facilitating anti-adhesive behavior of the resulting coating against polar and nonpolar substances. Due to the presence of ionic compds., e.g. ammonium moieties, the sp. surface resistance is decreased from 1015 to 108 .OMEGA.. Thus elec. charging of the surface is inhibited and the attraction of dust particles is avoided. For a special application in sensor technol. a polyacryloxysiloxane based coating modified with secondary amines is used as a CO2-sensitive layer on silica optical fibers. The reaction of amino groups with CO2 can be detected by optical means. ST review inorg org polymer chem modification Polysiloxanes, miscellaneous ΙT Polysiloxanes, miscellaneous RL: MSC (Miscellaneous) (fluorine-contq.; inorq.-orq. copolymers with high potential for chem. modification) Fluoropolymers, miscellaneous Fluoropolymers, miscellaneous ΙT RL: MSC (Miscellaneous) (polysiloxane-; inorg.-org. copolymers with high potential for chem. modification) Hybrid organic-inorganic materials ΙT (siloxane-based; inorg.-org. copolymers with high potential for chem. modification) THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD RE.CNT RF. (1) Brinker, C; Sol-Gel Science, The Physics and Chemistry of Sol-Gel Processing 1990 (2) Gauglitz, G; Nachr Chem Tech Lab 1995, V43, P316 CAPLUS (3) Kochem, K; Kunststoffe 1992, V82, P575 CAPLUS (4) Matejec, V; Sens Act B 1997, V38-39, P438

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